

IN THE CLAIMS

1. (Currently Amended) A method for preparation of an amino acid chelates, comprising the step of reacting a naturally occurring or synthetic metal carbonate with an acidic amino acid in an aqueous solution, wherein the metal carbonate is one or more carbonates with a valence of 2 or more selected from the group consisting of calcium carbonate, copper carbonate, zinc carbonate, ferrous carbonate, cobalt carbonate, chromium carbonate, magnesium carbonate and manganese carbonate; and the acidic amino acid is glutamic acid, aspartic acid or a combination thereof.

2. (Original) The method according to claim 1, wherein the metal carbonate is one or more carbonates with a valence of 2 or more selected from the group consisting of calcium carbonate, copper carbonate, zinc carbonate, ferrous carbonate, cobalt carbonate, chromium carbonate, magnesium carbonate and manganese carbonate; and the acidic amino acid is glutamic acid, aspartic acid or a combination thereof.

3. (Original) The method according to claim 1, wherein the metal carbonate is a naturally occurring metal carbonate.

4. (Original) The method according to claim 2, wherein the metal carbonate is calcium carbonate.

5. (Currently Amended) The method according to claim 4, wherein the calcium carbonate is derived from a naturally occurring source such as ~~seaweed calcium, eggshell calcium, shell calcium, cuttlebone and the like.~~

6. (Original) The method according to claim 2, wherein the acidic amino acid is glutamic acid, aspartic acid or a combination thereof.

7. (Original) The method according to claim 1, wherein the amount of the metal carbonate and acidic amino acid used in the reaction is in a molar ratio of 1 : 1 ~ 1 : 4 (metal carbonate : acidic amino acid); the reaction temperature is in the range of 0 ~ 100°C; and the reaction pH is adjusted to 4 ~ 7 at the time of termination of reaction.

8. (Original) The method according to claim 7, wherein the pH is adjusted to 4.5 ~ 6.5.

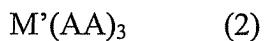
9. (Original) The method according to claim 1, wherein a metal sulfate is further added at the same time as the initiation of carbonate – amino acid reaction, or during the reaction, or after the termination of the reaction, thereby performing an additional reaction.

10. (Original) The method according to claim 9, wherein the metal sulfate is added during the carbonate – amino acid reaction or after the termination of the reaction to perform the additional reaction.

11. (Original) The method according to claim 9, wherein the metal sulfate is one or more sulfates selected from the group consisting of calcium sulfate, magnesium sulfate, zinc sulfate, copper sulfate, ferrous sulfate, manganese sulfate, chromium sulfate and cobalt sulfate, and also contains a metal ion different from the metal ion of the metal carbonate.

12. (Original) The method according to claim 9, wherein the amount of the metal sulfate used for the additional reaction is in a molar ratio of 1 : 1 ~ 1 : 4 (metal sulfate : carbonate-amino acid chelate) in which the carbonate-amino acid chelate is obtained from a reaction of the metal carbonate and acidic amino acid.

13. (Original) An amino acid chelate of FORMLA 1 or 2 as represented below which is prepared by the method of claim 1:



wherein, M is a divalent metal ion, and M' is a trivalent metal ion, and AA is an amino acid.

14. (Original) The amino acid chelate according to claim 13, wherein the amino acid chelate is one or more selected from the group consisting of calcium glutamate/aspartate, calcium bisglutamate, calcium bisaspartate, copper glutamate/aspartate, copper bisglutamate, copper bisaspartate, zinc glutamate/aspartate, zinc bisglutamate, zinc bisaspartate, iron glutamate/aspartate, iron bisglutamate, iron bisaspartate, iron bisglutamate/aspartate, iron glutamate/bisaspartate, chromium glutamate/aspartate, chromium bisglutamate, chromium bisaspartate, chromium bisglutamate/aspartate, chromium glutamate/ bisaspartate, cobalt glutamate/aspartate, cobalt bisglutamate, cobalt bisaspartate, magnesium glutamate/aspartate, magnesium bisglutamate, magnesium bisaspartate, manganese glutamate/aspartate, manganese bisglutamate, and manganese bisaspartate.

15. (Original) A composition containing the amino acid chelates of FORMULAS 1 and/or 2 according to claim 13 as active ingredients at a therapeutically effective amount, a sitologically effective amount, or a cosmetically effective amount.

16. (Original) The composition according to claim 15, wherein the composition is a pharmaceutical composition containing a pharmaceutically acceptable carrier.

17. (Original) The composition according to claim 15, wherein the composition is a food or beverage composition containing a sitologically acceptable carrier.

18. (Original) The composition according to claim 15, wherein the composition is a cosmetic composition containing a cosmetically acceptable carrier.

19. (New) The method according to claim 5, wherein the naturally occurring source is one or more selected from the group consisting of seaweed calcium, eggshell calcium, shell calcium and cuttlebone.